

CLAIMS

1. An apparatus for detecting an injection port (12) adapted to be subcutaneously implanted in a patient (13),
5 comprising:

a magnetic device (15;22) adapted to emit a local magnetic field, and

a magnetic detector (17;21) adapted to detect the local magnetic field emitted by the magnetic device,

10 wherein the magnetic device (15) or magnetic detector (21) is designed to be subcutaneously implanted in the patient at the implanted injection port (12), and the magnetic detector (17) or magnetic device (22) is movable externally along the patient's body to establish an injection position at
15 the patient's skin (16) in front of the implanted injection port where the local magnetic field emitted by the magnetic device is detected by the magnetic detector, whereby an injection needle can be placed in the established injection position, in order to insert the injection needle through the
20 patient's skin directly into the injection port substantially in the centre thereof.

2. An apparatus according to claim 1, wherein the magnetic detector (17;21) comprises a semiconductor circuit.

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3. An apparatus according to claim 2, wherein the semiconductor circuit of the magnetic detector (17;21) comprises at least one Hall-element (27).

30 4. An apparatus according to claim 3, wherein the magnetic detector (17;21) comprises several Hall-elements (27) grouped around a central point in a triangular or square-configuration.

5. An apparatus according to any one of claims 1-4, wherein the magnetic device (15) is designed to be subcutaneously implanted in the patient at the implanted injection port (12) to emit the local magnetic field through a portion of the patient's skin (16) adjacent to the injection port, and the magnetic detector (17) is movable externally along the patient's body to establish the injection position where the local magnetic field is detected by the magnetic detector.

6. An apparatus according to claim 5, wherein the magnetic device comprises a ring-magnet (15) designed to be implanted around the membrane of the implanted injection port (12).

7. An apparatus according to any one of claims 1-4, wherein the magnetic detector (21) is designed to be subcutaneously implanted in the patient at the implanted injection port (12), and the magnetic device (22) is adapted to emit the local magnetic field through the patient's skin (16) from outside the patient's body and is movable externally along the patient's body to establish the injection position where the local magnetic field is detected by the implanted magnetic detector.

8. An apparatus according to claim 7, wherein the magnetic device comprises a ring-magnet (22).

9. An apparatus according to claim 7 or 8, further comprising a sender (23) implantable in the patient's body and capable of sending information about the magnetic detector (21) to outside the patient's body, as the magnetic detector detects the local magnetic field emitted by the magnetic device (22) from outside the patient's body.

10. An apparatus according to any one of claims 1-9, wherein the magnetic detector is adapted to emit a sound when detecting the local magnetic field.

11. An apparatus according to any one of claims 2-6, wherein the magnetic detector is provided with at least one diode adapted to emit light when the detector detects the local magnetic field.

12. An apparatus according to any one of claims 2-6, wherein the magnetic detector is provided with a display adapted to indicate when the detector detects the local magnetic field.

13. An apparatus according to any one of claims 1-12, wherein the magnetic device (15;22) is a solenoid or a permanent magnet.

14. Use of the apparatus according to any one of claims 1-13 for detecting a subcutaneously implanted injection port, which is hydraulically connected to an implanted hydraulically adjustable constriction device for treating reflux disease, obesity, anal or urinary incontinence, or impotence.

15. A method of detecting an injection port (12) subcutaneously implanted in a patient, comprising:

providing a magnetic device (15;22) capable of emitting a local magnetic field through the patient's skin (16),

providing a magnetic detector (17;21) adapted to detect the local magnetic field emitted by the magnetic device,

subcutaneously implanting the magnetic device (15) or magnetic detector (21) in the patient at the implanted injection port (12),

moving the magnetic detector (17) or magnetic device (22) externally along the patient's body, and

establishing an injection position at the patient's skin (16) in front of the implanted injection port where the local
5 magnetic field emitted by the magnetic device is detected by the magnetic detector.

16. A method according to claim 15, wherein the magnetic device (15) is subcutaneously implanted, the magnetic detector
10 (17) is moved externally along the patient's body, and the injection position is established at the patient's skin (16) where the local magnetic field emitted by the implanted magnetic device is detected by the moving magnetic detector.

15 17. A method according to claim 15, wherein the magnetic detector (21) is subcutaneously implanted, the magnetic device (22) is moved externally along the patient's body, and the injection position is established at the patient's skin (16) where the local magnetic field emitted by the moving magnetic
20 device is detected by the implanted magnetic detector.

18. A method according to claim 17, further comprising implanting a sender (23) and using the sender to send
information to outside the patient's body confirming when the
25 implanted magnetic detector (21) detects the local magnetic field emitted by the exterior magnetic device (22).

19. A method according to any one of claims 15-18, wherein a semiconductor circuit is used as the magnetic
30 detector (17;21).

20. A method according to claim 19, wherein the semiconductor circuit comprises at least one Hall-element.